

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		Attorney Docket No. ITI-169
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. Application No. (If known, see 37 CFR 1.5)
International Application No. PCT/GB94/00995	International Filing Date 9 May 1994	Priority Date Claimed 25 September 1993
TITLE OF INVENTION: IMPROVEMENTS RELATING TO THE LINING OF PIPELINES OR PASSAGEWAYS		
APPLICANT(S) FOR DO/EO/US: Kevan Charles Taylor		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.		
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). 4. <input type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the Agent for the inventor. 10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). 		
Items 11. to 16. below concern other document(s) or information included:		
<ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 14. <input type="checkbox"/> A substitute specification. 15. <input type="checkbox"/> A change of power of attorney and/or address letter. 16. <input checked="" type="checkbox"/> Other items or information: Petition Pursuant to 37 C.F.R. § 1.47(b) 		

U.S. Application No. (If known, see 37 CFR 1.50)				Int'l Appln No PCT/GB95/00110		Atty Docket No ITI-157	
17. ■ The following fees are submitted: Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO \$850 International preliminary examination fee paid to USPTO (37 CFR 1.482) \$660 No International preliminary examination fee paid to USPTO (37 CFR 1.482) but International search fee paid to USPTO (37 CFR 1.445(a)(2)) \$730 Neither International preliminary examination fee (37 CFR 1.482) nor International Search fee (37 CFR 1.445(a)(2)) paid to USPTO \$980 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) ... \$ 92				CALCULATIONS		PTO USE ONLY	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$980			
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e))							
Claims	Number Filed	Number Extra	Rate				
Total Claims		10 - 20 =	X \$22.00	\$			
Independent Claims		1 - 3 =	X \$76.00	\$			
Multiple dependent claims(s) (if applicable)			+ \$240.00	\$			
TOTAL OF ABOVE CALCULATIONS =				\$980			
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28)				\$			
SUBTOTAL =				\$			
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f))				\$			
TOTAL NATIONAL FEE =				\$980			
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) \$40.00 per property +				\$			
TOTAL FEES ENCLOSED =				\$ 130			
				Amount to be refunded:		\$	
				charged:		\$	

U.S. Application No (If known, see 37 C.F.R. 1.50)	International Appln No PCT/GB95/00110	Atty Docket No ITI-157
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a. ☒ A check in the amount of \$980.00 to cover the above fee is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate of this sheet is enclosed.

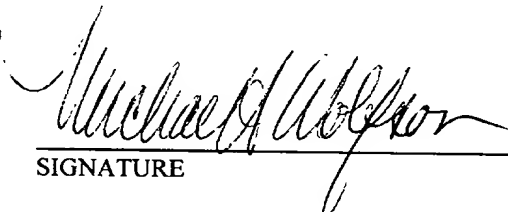
c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 03-3415. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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SIGNATURE

Michael I. Wolfson
NAME

24,750
REGISTRATION NO.

EXPRESS MAIL CERTIFICATE 37 C.F.R. 1.10

DATE OF DEPOSIT: March 25, 1996EXPRESS MAIL LABEL NO.: EG 593 087 102 US

I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to Commissioner of Patents & Trademarks, Washington, D.C. 20231.

Kenneth Morte

Printed Name of Person
Mailing Paper or Fee


Signature

8/604975
25 MAR 1996

Attorney Docket No. ITI-169

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: KEVAN TAYLOR
International Application No.: PCT/GB94/00995
International Filing Date: 9 May 1994
Serial No.: to be assigned
Filed: Herewith
For: LINING OF PIPELINES OR
PASSAGEWAYS

Date: March 22, 1996

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to calculation of the filing fee in this national phase application, please amend the claims as follows.

IN THE CLAIMS

In claim 4, line 1, please delete "any preceding claim" and insert --claim 1,--.

In claim 8, line 1, please delete "6 or 7".

REMARKS

This Preliminary Amendment is filed with the application in order to remove improper multiple dependencies in the original PCT application.

EXPRESS MAIL CERTIFICATE 37 CFR 1.10

Date of Deposit March 25, 1996

Express Mail Label No. EG 593 087 102 US

I hereby certify that this paper is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231

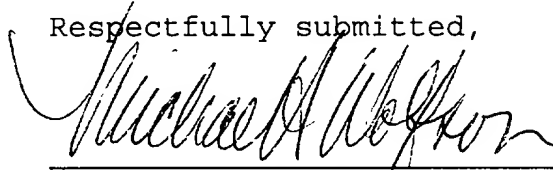
Kenneth Morte
Name of Person Mailing

Kenneth Morte
Signature

Upon entry of this Amendment, the application will include ten claims and two independent claims. Accordingly, no additional fee will be due for multiple dependent claims.

If there is any question with respect to entry of this Amendment, kindly contact the undersigned attorney.

Respectfully submitted,



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Improvements Relating to the Lining of Pipelines and
Passageways

This invention relates to the lining of pipelines and passageways, using linings which have now become known as "cured in place" linings, which comprise tubular structures comprising or including at least one layer of resin absorbent material which is impregnated with a curable synthetic resin. The tubular structure while impregnated with resin and whilst the resin is uncured, is shaped to the surface which it is to line and held in that position by fluid pressure. Curing of the resin then takes place, or is caused to take place, so that the tubular structure will form a rigid layer which remains in place on the surface by virtue of its own rigidity and/or by virtue of bonding to the surface, but in any event an effective lining is provided.

Cured in place systems have been used very successfully for many years for the lining of underground pipelines and passageways, in particular sewer pipes, and examples of cured in place lining systems are disclosed in US Patents 4,009,063 and 4,064,211.

In these prior patents, it is envisaged that long lengths of main sewer lines will be lined, but in any main sewer line there are what are known as lateral connections which are the side or branch pipes which lead from the sewer to for example domestic consumption points. When a lining is applied along a main sewer as described in said US patents, the tubular structure will cover the lateral connections and these subsequently have to be reopened by the cutting away of coupons of the rigid lining in register with the lateral connections.

It is also been proposed to apply lining tubes in the said

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lateral passageways, but for a long time there has been a problem in providing an effective coupling arrangement in the region where the lateral passageway meets the main pipe. Indeed, in many cases it is the lateral/main pipe connection which causes the greatest problem in practice and often in a defective sewer pipe, it is only the lateral/main pipe connections which require to have a cured in place lining structure applied thereto.

When main line linings have been applied, and coupons are cut therefrom, difficulties often remain at the lateral/main pipe connections, and attempts have been made to cure these defects, but generally speaking the procedure is difficult and unsatisfactory.

The present invention seeks to provide a cured in place assembly for a lateral/main pipe connection whereby many of the difficulties at present existing will be overcome.

More particularly, the invention seeks to provide an assembly which can be positioned in the region of a lateral/main pipe connection and by a single operation results in the creation of a cured in place structure forming an effective lateral main pipe seal.

In accordance with the invention in a broadest aspect thereof an assembly for effecting a cured in place lining in the region of a lateral/main pipe connection, comprises a length of tubular structure for application to the main pipe surface to each side of a lateral connection, said length of main pipe tubular structure having a wall aperture for register with the lateral pipe, and a lateral extension tubular structure for extending into the lateral, said lateral tubular structure and main pipe tubular structure being of cured in place type in that each comprises at least one layer

of a resin absorbent material which in use is impregnated with curable synthetic resin.

By providing this assembly, which is in effect a "tailored" unit to be urged into close contact in the region of the lateral/main pipe connection, a simple and effective means is provided for addressing the difficulty of forming a seal in the region of a lateral/main pipe connection.

To interconnect the extension tubular structure and a main pipe tubular structure, the main pipe tubular structure may be initially fabricated and provided with an aperture therein. The extension tubular structure may be provided at one end with a collar and the extension tubular structure is fed through the said aperture in the main pipe tubular structure so that the collar lies to the inside of the main pipe tubular structure. The said collar may be a rigid plastics material collar, or it may be a collar of resin absorbent materials similar to that of the extension tubular structure.

Additionally, it is preferred that there be provided a tailored inflation assembly for the purposes of inflating the main pipe tubular structure and the extension tubular structure simultaneously. The inflation assembly may be made of a robust inflatable material such as a reinforced silicone rubber bag which is defined to have a main inflation portion which will lie inside the main line tubular structure in use, and an inflatable arm portion which lies inside the extension tubular structure in use.

To assemble the bag assembly and the cured in place lining unit, the inflation assembly is deflated and the arm is pushed inwardly of the main bag so as to be inverted therein. The main bag in this condition is positioned inside the main

tubular structure which by this time will have been impregnated with a curable resin, and the main bag and arm are inflated so that the arm everts through the extension tubular structure. The inflation assembly is then deflated again, and the arm is again inverted into the inside of the main bag, but this time the extension tubular structure is also inverted inside the inflatable arm. In this condition, the combined assembly and the lining carried thereby are introduced into the appropriate pipeline or passageway, with the inverted arm and extension tubular structure in register with the lateral pipe and then the bag assembly is reinflated which causes the main tubular structure to be inflated against the main pipe on opposite sides of the lateral, and the extension tubular structure to be everted into the lateral and against the lateral surface. This condition is maintained whilst the resin is caused or allowed to cure. When curing has been completed, and the lining assumes a rigid condition, the bag is again deflated and simply removed from the now remaining in place lining.

It is preferred that the resin should be of the ambient cure type which means that it will cure with the passage of time, which may be quite short, a matter of an hour or two, so that no external curing initiation means is required. It is of course possible to use resins which require cure initiation such as heat cure resins, light cure, ultrasonic and so on, but when other than ambient cure resin is utilised, extra means must be provided on site for initiating the cure which increases the cost of the process.

The inflation bag assembly may be designed to permit the flow of liquid along the main pipeline or passageway whilst the bag is inflated. To this end the inflation bag may be provided with a central core tube through which liquid can pass. The advantage of this is that when the bag is inflated

inside the main pipe, the liquid which normally flows through the pipe, for example sewage, can continue to flow through the inflated bag assembly and there will be no requirement therefore to divert the flow whilst the operation is taking place.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, wherein:-

Fig. 1 shows a sectional elevation an underground sewer pipe with a lateral pipe connected thereto, and equipment for applying a lining in accordance with the invention;

Fig. 2 shows the arrangement of Fig. 1 with the lining in position;

Fig. 3 is an enlarged view in cross sectional elevation showing the positioning of the lining when inflated as in Fig. 2;

Fig. 4 is a view similar to Fig. 3, but showing the lining when deflated as in Fig. 1;

Fig. 5 is a perspective view of the lining assembly when in the Fig. 3 condition;

Fig. 6 is an exploded perspective view illustrating the method of assembly of the lining; and

Fig. 7 is a cross sectional view showing the lining in position in the pipeline or passageway.

Referring to the drawings, in Fig. 1 an underground main sewer pipe 10 is illustrated, and it is joined by a lateral

pipe 12 at an angle as shown.

The requirement is that the region 13 of the lateral/main pipe connection is to be lined with a cured in place liner. In accordance with the embodiment of the invention the liner is flexible and resin absorbent and is fabricated and tailored to fit the region 13 so as to line a portion of the lateral where it joins the main pipe 10, and also to line the main pipe to opposite sides of the lateral.

In Fig. 1 an installation apparatus is illustrated and comprises a tractor 14 of any suitable configuration to which is connected an umbilical cord 15 which may include a television camera cable and air and water supplies as appropriate. In this example, the tractor is connected to a coupling 16 which is rotatable, and a clamping and release device 18 connects to the lining assembly 20. By movement of the tractor 14, controlled typically from ground level, the lining assembly 20 can be moved into position, and in this connection it can also be rotated by rotating the coupling 16 so that as required the lining assembly 20 is in correct register with the lateral pipe 12, a part of which is to be lined.

In the arrangement of Fig. 1, the lining assembly is shown deflated, but under the control of the operator at ground level, the assembly 20 can be inflated to the Fig. 2 position in which a portion of the main pipe to opposite sides of the lateral is lined with a cured in place tubular lining structure and an adjacent portion of the lateral 12 is also lined with an extension cured in place liner.

In this example the resin which is used is an ambient cure resin, and the condition shown in Fig. 2 is held until curing of the resin takes place. When curing has been completed

sufficiently, the assembly 20 is deflated or more particularly an inflation bag thereof is deflated, and the bag can then simply be pulled clear of the rigid lining which is left in place.

Figs. 3 and 4 show the arrangement in more particular detail to facilitate understanding.

Referring to Fig. 3, the cured in place liner comprises a main pipe tubular structure 22 which comprises at least one layer of resin absorbent material impregnated with the curable synthetic resin, and an extension cured in place tubular structure 24 which lies on the lateral pipe 12. Extension tubular structure 24 is provided with an inner end collar 26 which is also impregnated with resin and which abuts the inner surface of the tubular structure 22 and may be connected thereto, so that the tubular portion 24 projects through an aperture 27 in the main tubular structure 22. The length of the extension 24 is selected depending upon the length of the lateral pipe 12 to be lined, but the main function of this lining assembly is to line the region (13) of the connection between the lateral pipe and the main pipe.

Inside the lining is an inflation bag 28 formed of suitable inflation material such as reinforced silicone rubber, and the bag has an arm 30 extending therefrom which performs the inflation of the extension tube 24 as will be understood.

At the ends of the main portion of the bag which inflates the main tubular structure 22, it has openings which are clamped around an infeed sleeve 32 in the case of the left-hand end, and a blocking plug 34 in the case of the right-hand end.

The sleeve 32 is utilised for the injection of air under pressure as indicated by arrows 35 whereby the bag 28 may be

inflated to the condition shown.

Fig. 4 shows the arrangement wherein the bag and the lining applied thereto are in the deflated condition in which the assembly can be moved into position as shown in Fig. 1.

The extension tubular structure 24 is inverted along with the arm 30 of the bag so as to lie inwardly of the tubular structure 22. When the arrangement shown in Fig. 4 is inflated by introducing for example air under pressure, the assembly inflates to the condition shown in Fig. 3 and is held in this condition until curing is completed.

When the impregnated assembly 22, 24, 26 is transported along the main sewer pipe 10 it may be contained in a protective sleeve of plastics film or the like which is superficial and renders trapped between the cured assembly and the pipe walls.

Figs. 5 and 6 show slightly more detail concerning the assembly of the lining and the bag.

As shown in Figs. 6, the main tubular structure 22 provided with the aperture 27 is arranged to have the extension 24 arranged so that collar 26 of extension 24 is located the structure 22 so that the extension tube 24 projects through the aperture 27 as shown in Fig. 6.

Next, the bag 28 is introduced into the inside of the liner and is inflated as shown in Fig. 5 so that the arm 30 in being inflated lies inside the extension tube 24. The bag 28 is now deflated, and the arm 30 is inverted to the position shown in Fig. 4 (and also in Fig. 6) and at the same time the extension tube 24 is also inverted with the arm 30 so that the Fig. 4 (and Fig. 6) condition is reached and the assembly

can be placed in the main pipe 10 as shown in Fig. 1.

As mentioned above, inflation when the assembly 20 is appropriately registered with the lateral 12 results in the Fig. 3 position being achieved. Fig. 7 is a sectional view of the lining and bag when in the Fig. 3 position.

The absorbent material of the liner may be any suitable such as fibrous felt material, and it is preferred that ambient cure resin should be used for impregnation of the felt as explained herein. The felt is soaked in the resin in the main tubular structure 22 the extension 24, and the collar 26.

Any suitable inflation medium can be used for inflating the bag 28, and it may be hot or cold. Air or water or both can be used.

The bag 28 preferably is undersize in relation to the felt liner so that when it is deflated it can be readily pulled out.

It can be arranged that flow through of the medium which normally flows in the pipe 10 can be achieved by, for example as shown in Fig. 3, providing that a core tube as shown in dotted lines and illustrated by reference 50 extends through the bag and provides a route for the flow of sewage through the inflated bag. In this case the blocking plug 34 would of course not be used.

It is preferred that a minimum shrinkage resin be utilised and suitable resins are epoxy resins and neopentylglycol.

The lining according to the embodiment is particularly useful for application to the region of where a lateral meets a main

CLAIMS

1. An assembly for forming a cured-in-place lining in the region (13) of a lateral/main pipe connection, characterised in that the assembly comprises a length of tubular structure (22) for application to the main pipe surface to each side of a lateral connection pipe (12), said length of main pipe tubular structure (22) having a wall aperture (27) for register with the lateral pipe (12), and a lateral extension tubular structure (24) extending from said aperture (27) and for extending into the lateral pipe (12), said lateral tubular structure (24) and main pipe tubular structure being of cured in place type in that each comprises at least one layer of a resin absorbent material which in use is impregnated with curable synthetic resin.
2. An assembly according to Claim 1 characterised in that, the main pipe tubular structure (22) initially fabricated and provided with said aperture (27) therein and the extension tubular structure (24) is provided at one end with a collar (26) and the extension tubular structure is fed through the said aperture (27) in the main pipe tubular structure (22) so that the collar (26) lies to the inside of the main pipe tubular structure.
3. An assembly according to Claim 2, characterised in that the collar (26) is of resin absorbent material similar to that of the extension tubular structure (24).
4. An assembly according to any preceding claim, characterised by tailored inflation member (28) for the purposes of inflating the main pipe tubular structure (22) and the extension tubular structure (24) simultaneously.
5. An assembly according to Claim 4, characterised in that

the inflation member (28) is of a robust inflatable material such as a reinforced silicone rubber bag (28) which is defined to have a main inflation portion which lies inside the main line tubular structure (22) in use, and an inflatable arm portion (30) which lies inside the extension tubular structure (24) in use.

6. An assembly according to Claim 5, characterised in that the inflation bag (28) is designed to permit the flow of liquid along the main pipeline or passageway whilst the bag (28) is inflated.

7. An assembly according to Claim 6, characterised in that the bag (28) is provided with a central core tube (50) through which liquid can pass.

8. A method of assembling the assembly of claim 5, 6 or 7 characterised in that the inflation member (28) is deflated and the arm (30) is pushed inwardly to be inverted into the bag (28), the bag (28) is positioned inside the main tubular structure (22) which is impregnated with a curable resin, and the bag 28 is inflated so that the arm (30) everts through the extension tubular structure (24) which is also impregnated with resin, the member (28) inflation is then deflated again, and the arm (30) is inverted into the inside of the bag (28), along with the extension tubular structure (24).

9. A method according to Claim 8, characterised in that the assembly is introduced into a main pipe with a lateral pipe until the inverted arm (30) and extension tubular structure (24) are in register with the lateral pipe and then the bag is reinflated which causes the main tubular structure (22) to be inflated against the main pipe (10) on opposite sides of the lateral pipe (12), and the extension tubular structure

(24) to be everted into the lateral pipe (12) and against the lateral pipe surface, and the assembly is maintained in this condition whilst the resin is caused or allowed to cure.

10. The method of Claim 9, characterised in that when curing has been completed, and the lining assumes a rigid condition, the bag (28) is again deflated and removed from the now remaining in place lining.

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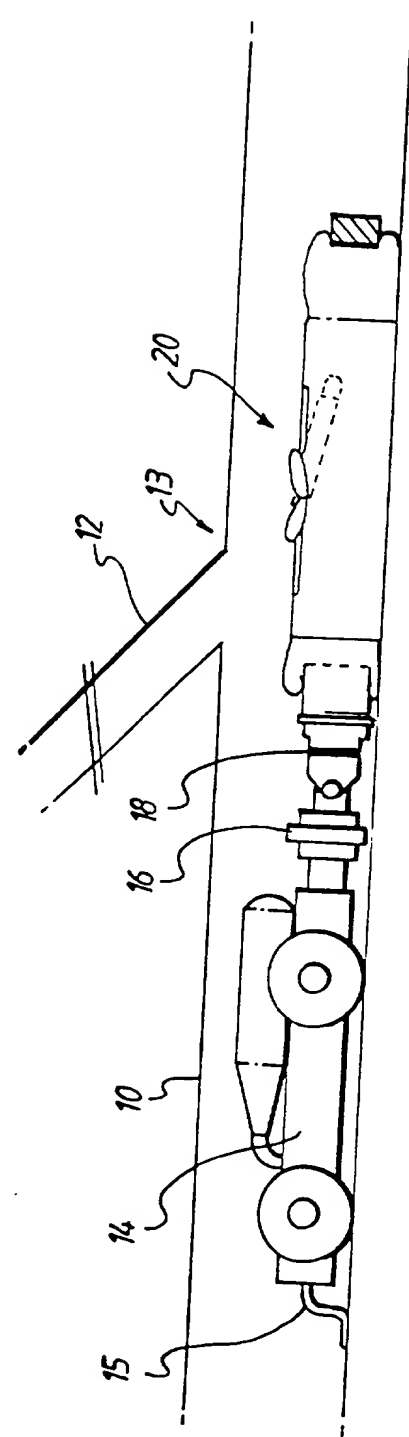


FIG. 1

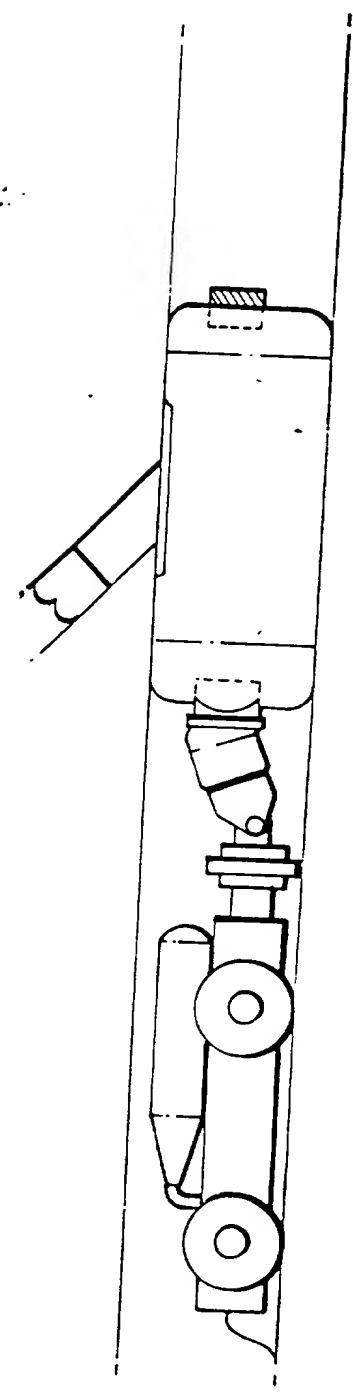


FIG. 2

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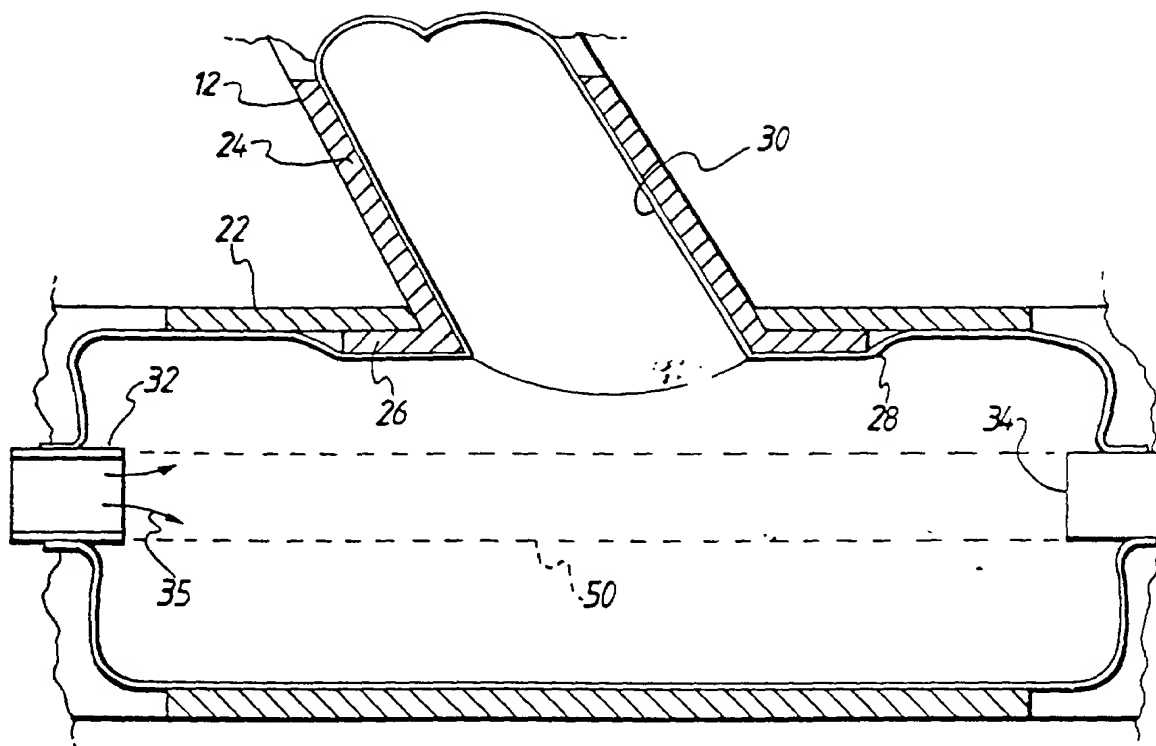


FIG. 3

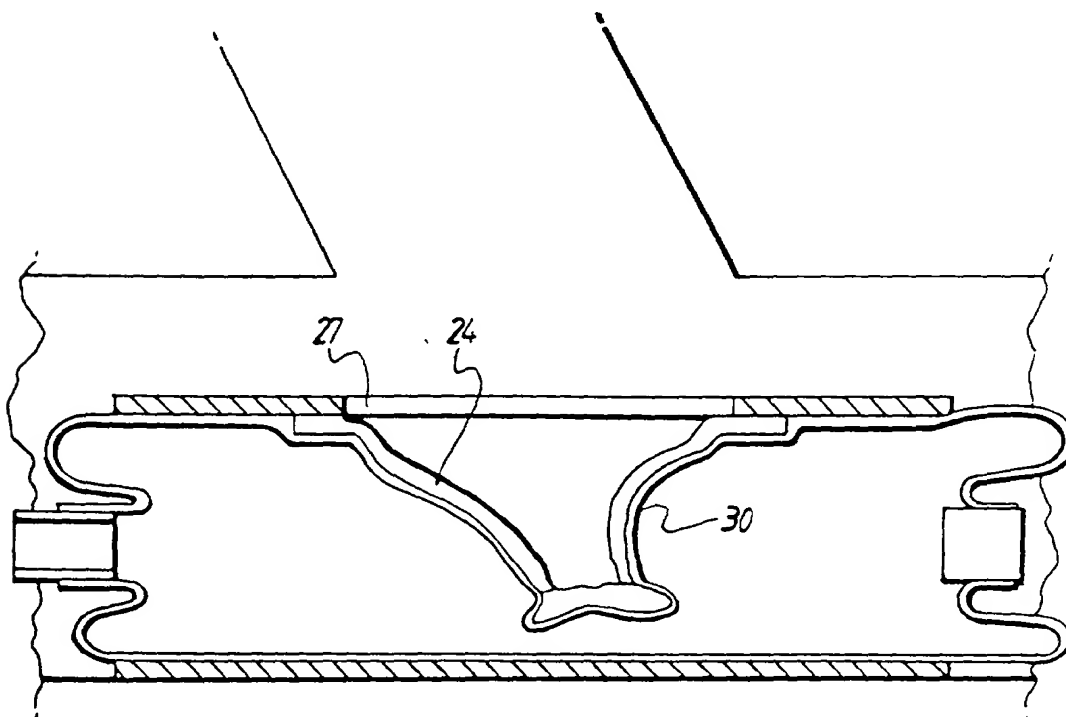


FIG. 4

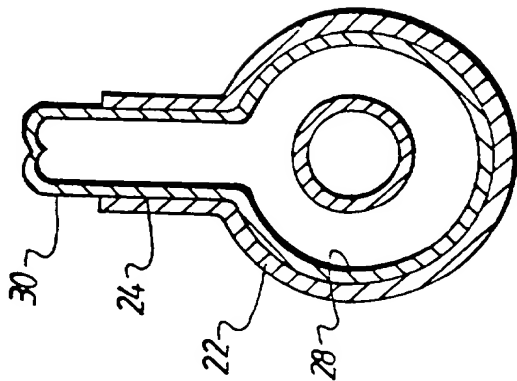


FIG. 7

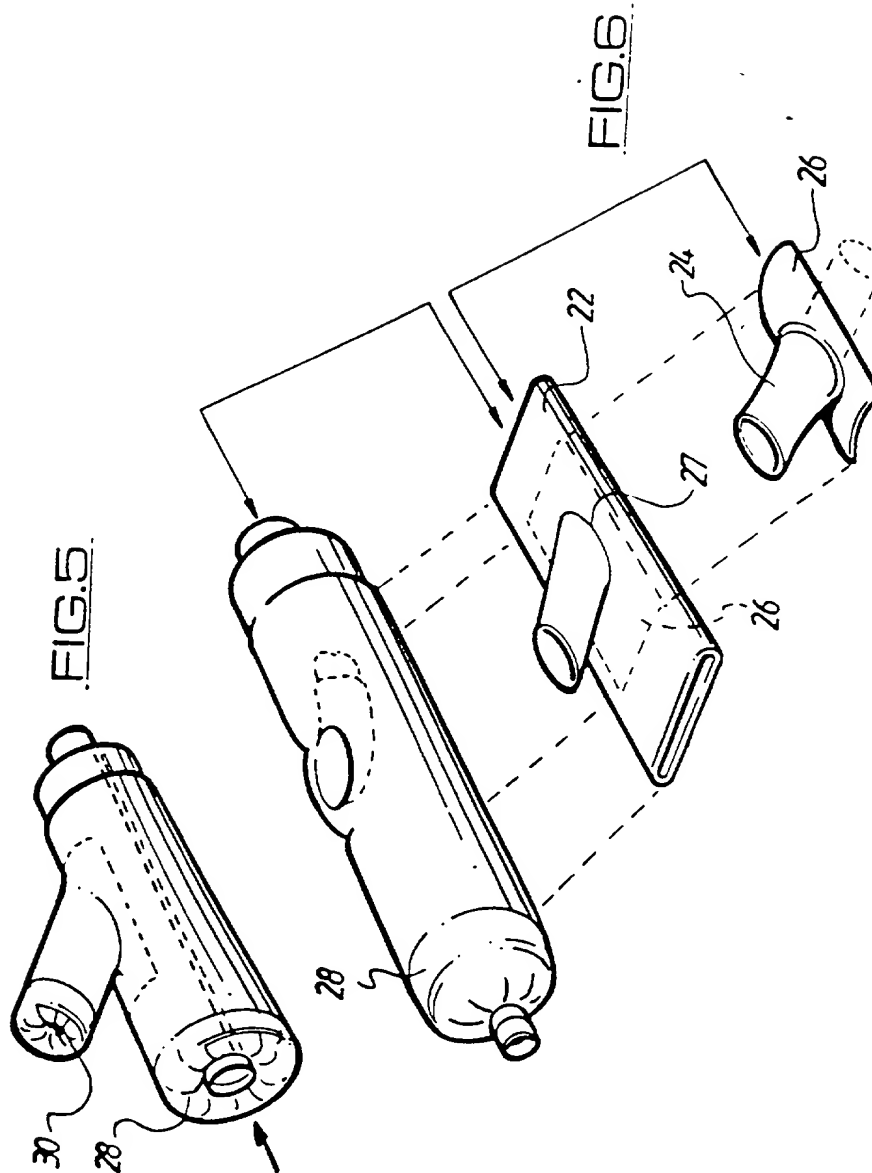


FIG. 5

FIG. 6

Attorney Docket No. ITI-169

DECLARATION, POWER OF ATTORNEY AND PETITION

As an officer of the owner of the invention and Agent of the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe that the below named inventor is the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**IMPROVEMENTS RELATING TO THE LINING
OF PIPELINES OR PASSAGEWAYS**

the specification of which is attached hereto and was filed on 9 May 1994 as PCT/GB94/00995 and filed in the British Patent Office as British Application No. 9319832.3 on 25 September 1993.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign Applications				
(Number)	(Country)	Day/Month/Year	Yes	No
9319832.3	Great Britain	25 Sept 1993	X	
PCT/GB94/00995	Great Britain	9 May 1994	X	

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of the application.

(App Ser No)

(Filing Date)

(Status)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so

Attorney Docket No. ITI-169

made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

And I hereby appoint Michael I. Wolfson, Reg. No. 24,750, William H. Dippert, Reg. No. 26,723, Morey B. Wildes, Reg. No. 36,968 and Regan L. Trumper, Reg. No. 38,345, correspondence address:

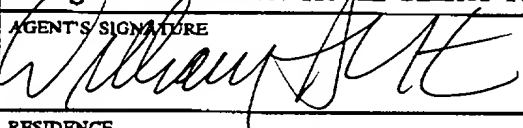
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my attorney with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Wherefore I pray that Letters Patent be granted for the invention or discovery described and claimed in the foregoing specification and claims, and I hereby subscribe my name to the foregoing specification and claims, declaration, power of attorney, and this petition.

FULL NAME OF INVENTOR KEVAN CHARLES TAYLOR	CITIZENSHIP Great Britain
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POST OFFICE ADDRESS 3226 Knight Lane, Apartment No. 258, Memphis, TN 38115	

FULL NAME OF AGENT WILLIAM A. MARTIN	CITIZENSHIP U.S.
as Agent for inventor Kevan Charles Taylor	
AGENT'S SIGNATURE 	DATE 3-20-96
RESIDENCE 2128 Spring Hollow Lane, Germantown, TN 38139	
POST OFFICE ADDRESS 2128 Spring Hollow Lane, Germantown, TN 38139	